Intelligent Munitions System Integral to Networked Lethality

James C. Sutton

Like other outdated paradigms, the defensive, dumb, solitary killer landmine has no place in the Future Force. The Intelligent Munitions System (IMS) is an unattended munitions system providing both offensive battlespace shaping and defensive force protection capabilities for the Future Force. How? Networked lethality makes the difference. The IMS is a system of lethal and nonlethal munitions integrated with robust command and control features, communications devices and sensors and seekers that make it an integral part of the Future Combat Systems (FCS) network's core systems.

IMS provides unmanned terrain dominance, economy of force and risk mitigation for the warfighting commander. Typical missions include:

- Isolating enemy forces, objectives, and areas of decisive operations.
- Creating lucrative targets and engaging them or cueing other fires.
- Filling gaps in the noncontiguous battlespace.
- Controlling noncombatant movement with its nonlethal capabilities.

With its reduced footprint, IMS can be delivered by various means and, once on the ground, locate itself, organize all of its components and report its location to the Battle Command Mission Execution (BCME). It will be under positive control of the BCME, one of the FCS command and control applications. The munition field can be armed, turned off to allow friendly passage, then rearmed to resume its mission.

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This on-off-on capability allows it to be recoverable, further reducing its logistics footprint. IMS will not become a residual hazard; it will self-destruct on command or at a preset time interval. It will also be tamper resistant.

As part of FCS's networked lethality, IMS provides target engagement without latency, cues other networked munitions like the Non-Line-of-Sight Launch System (NLOS-LS), and supports situational awareness (SA). FCS unattended ground sensors (UGS) also support SA. IMS and UGS will often be employed together. Additionally, it makes good business sense to seek acquisition economies. For these reasons, development and acquisition of IMS and UGS are coordinated as described below.

The IMS program, like the other unattended munition, NLOS-LS, has a management structure tailored to its risks. IMS is managed by the Project Manager Close Combat Systems (PM CCS) under the Program Executive Officer for Ammunition. The IMS team relies on the Lead Systems Integrator to complete the physical and network integration in the FCS architecture and to ensure the network is extended to include IMS and NLOS-LS. Operating under empowering memoranda of agreement, the IMS team's primary organizational link to FCS overall program management is through the Lethality Integrated Product Team (IPT). (See "FCS-Equipped UA Complementary and Associate Programs" on Page 22 for more information.) Close and continuous contact is also maintained with the Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance IPT because of the overriding importance of networked lethality and the contribution that IMS can make to SA. Another memorandum of agreement between PM CCS and Project Manager Night Vision/Reconnaissance, Surveillance and Target Acquisition ensures the coordination of IMS and UGS programs. Within the IMS program,

daily execution of tasks is managed by a multidisciplinary IPT. In addition to the functional disciplines, technical expertise from several Army activities is included to address munitions, sensors, command and control and communications technologies.

As a risk reduction measure and to maintain competition, two best-of-industry teams are currently in an IMS competitive development phase. This phase will culminate in a down selection based in large measure on integration into the FCS Family-of-Systems. To this end, each team is maximizing modeling and simulation within its respective System Integration Laboratory. Outputs from these will feed the FCS System-of-Systems Integration Lab.

The IMS, an integral part of FCS, will be delivered by multiple means and operate across the full spectrum of operations to provide immediate engagement and unattended area denial effects — scaleable nonlethal and lethal munitions that deny enemies the use of an area.

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FCS Spiral Development and the S&T Community

George J. Mitchell

FUTURE COMBAT SYSTEMS
FCS
One Team-The Army/Defense/Industry

The Program Manager (PM) Future Combat Systems (FCS) will use spiral development to bring forward subsystems and other enabling technologies that require maturation before inserting them into the system architecture. In the FCS Acquisition Decision Memorandum (ADM), the Under Secretary of Defense for Acquisition, Technology and Logistics (USDAT&L) addresses DOD's thrust with evolutionary acquisition and its goal to shorten development time for delivery of military capability. The use of a spiral development strategy for FCS is intended to deliver to the user desired capability sooner rather than waiting for a future increment. The ADM continues by stating that the "... program must remain flexible and open to accommodate [system] trades ... with the objective of providing an effective, affordable, producible and supportable increment of military capability."

These statements from the USDAT&L are consistent with DoDI 5000.2, *Operation of the Defense Acquisition System*, which states that the goal of evolutionary acquisition (including spiral development) is to balance needs and available capability with resources. It further states that success of the strategy depends in part on the maturation of technologies.

To fold these systems into the FCS, the Program Management Office (PMO) was charged with crafting a strategy to spiral forward specific subsystems and technology opportunities into FCS Increment I. For PM FCS, the challenges associated with managing technologies and associated resources meant that the FCS architecture must be developed now to allow room for system growth and spiral insertion of the subsystems and technologies in the future. As technologies